

Application No.: 10/620753
Amendment dated: May 27, 2005
Reply to Office action of March 8, 2005

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1 (currently amended). A tensioner comprising:
a housing having a front end, and a plunger-receiving
hole, said hole having a front end, formed in said
housing, said hole having an opening at said front
end of the housing, and said hole having a plunger-
receiving part having a first diameter spaced from
said front end of the housing, and a widened part
adjacent said front end of the housing, said widened part
having a diameter wider than said first
diameter and a shoulder recessed from said front end
and facing toward said front end;
a plunger having a longitudinal axis and slidably fitting
into said plunger-receiving hole and protruding
axially from the opening thereof in a protruding
direction, said plunger having an external surface
with longitudinally extending, toothed racks formed
thereon;
a protrusion biasing spring, biasing said plunger in said
protruding direction;
a cam-receiving ring, through which the plunger extends,
the cam-receiving ring being located in said widened
part of the hole, and having an oblique cam-guiding
surface, said guiding surface sloping in the
direction of protrusion of the plunger and outward
from the axis of the plunger;

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a ring-biasing spring, biasing said cam-receiving ring in the direction of protrusion of the plunger;

a plurality of wedge-shaped cams, which slide on the oblique cam-guiding surface of the cam-receiving ring, and engageable with the racks on said plunger;

a cam-biasing spring, biasing said wedge-shaped cams in the direction opposite to said direction of protrusion of the plunger; and

a seal cap on said housing, the seal cap having a cap opening through which the plunger extends axially, and cooperating with said widened portion of said hole to provide an enclosure containing said ring-biasing spring, said cam-receiving ring, said wedge-shaped cams, and said cam biasing spring, said seal cap having an inside end surface surrounding said cap opening;

wherein said cam-receiving ring is disposed between said inside end surface of said seal cap and said shoulder, and movable axially therebetween.

2(original). A chain tensioner according to claim 1, in which when the minimum backlash distance of said plunger is defined as M, the maximum backlash distance of said plunger is defined as N, the maximum displacement of said cam-receiving ring is defined as S, the return distance of the plunger due to displacement of said cams from a position immediately preceding the position at which said cams step over one tooth of the racks is defined as n, and the return distance of the plunger due to displacement of said cams from a position immediate following the position at which said cams step over one tooth of the racks is defined as m, the dimensions of the

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racks of the plunger, the wedge-shaped cams, and the cam-receiving ring satisfy the relationships $M = m + S$ and $N = n + S$.